

## WHAT IS CLAIMED IS:

1. A bleaching composition comprising an organic catalyst compound, in conjunction with or without a peroxygen source, wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 30 minutes.

2. The bleaching composition according to Claim 1 wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 45 minutes.

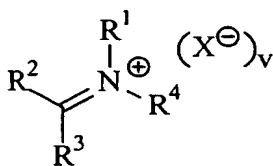
3. The bleaching composition according to Claim 1 wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 60 minutes.

4. The bleaching composition according to Claim 1 wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 90 minutes.

5. The bleaching composition according to Claim 1 wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 2 hours.

6. The bleaching composition according to Claim 1 wherein said organic catalyst compound is selected from the group consisting of:

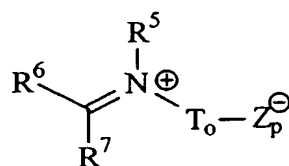
(a) aryliminium cations and aryliminium polyions having a net charge of from about +3 to about -3, are represented by the formula [I]:



[I]

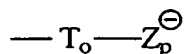
where  $R^2$ - $R^3$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^1$  and  $R^4$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals, provided that when  $R^1$  or  $R^4$  is isopropyl,  $R^2$  or  $R^3$  is not  $\text{ArCOCH}_3$ ;  $X^-$  is a suitable charge-balancing counterion;  $v$  is an integer from 1 to 3;

(b) aryliminium zwitterions having a net charge of from about +3 to about -3, are represented by the formula [II]:



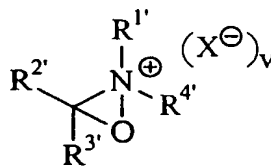
[II]

where  $R^5$ - $R^7$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:



where  $\text{Z}_p^-$  is covalently bonded to  $\text{T}_o$ , and  $\text{Z}_p^-$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$  and  $p$  is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl and heterocyclic ring;

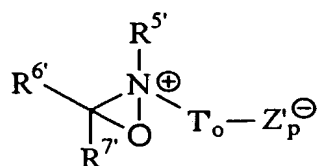
(c) oxaziridinium cations and polyions having a net charge of from about +3 to about -3, are represented by the formula [III]:



[III]

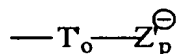
where  $R^{2'}$ - $R^{3'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{1'}$  and  $R^{4'}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals, provided that when  $R^{1'}$  or  $R^{4'}$  is isopropyl,  $R^{2'}$  or  $R^{3'}$  is not  $ArCOCH_3$ ;  $X^-$  is a suitable charge-balancing counterion; and  $v$  is an integer from 1 to 3;

(d) oxaziridinium zwitterions having a net charge of from about +3 to about -3 are represented by formula [IV]:



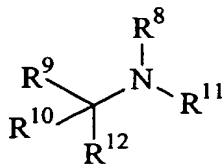
[IV]

where  $R^{5'}$ - $R^{7'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:

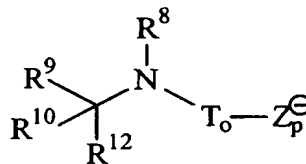


where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

(e) modified amines, which have a net charge of from about -3 to about +3, that are represented by formulas [V] and [VI]:

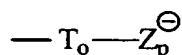


[V]



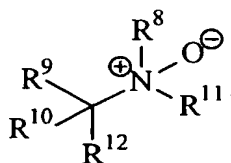
[VI]

where  $R^9$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^8$  and  $R^{11}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and the radical represented by the formula:

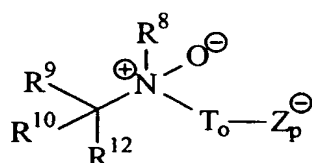


where  $Z_p^\ominus$  is covalently bonded to  $T_o$ , and  $Z_p^\ominus$  is selected from the group consisting of  $-CO_2^\ominus$ ,  $-SO_3^\ominus$ ,  $-OSO_3^\ominus$ ,  $-SO_2^\ominus$  and  $-OSO_2^\ominus$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

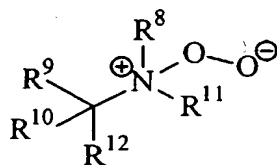
(f) modified amine oxides, which have a net charge of from about -3 to about +3, that are represented by formulas [VII]-[X]:



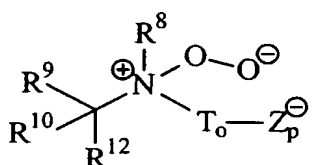
[VII]



[VIII]



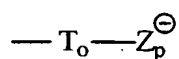
[IX]



[X]

where  $R^8$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or

cationic charge carrying radicals;  $R^{11}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and also present in this formula is the radical represented by the formula:

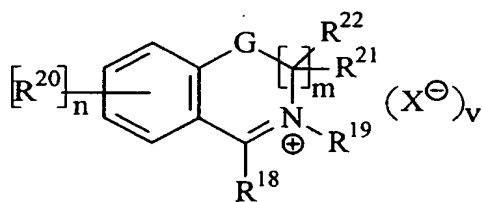


where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl and heterocyclic ring; and

(g) mixtures thereof.

7. The bleaching composition according to Claim 6 wherein said organic catalyst compound is selected from the group consisting of:

(a) aryliminium cations and aryliminium polyions having a net charge of from about +3 to about -3, are represented by the formula [XI]:

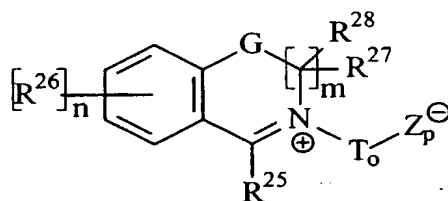


[XI]

where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>20</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>20</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring, provided that when R<sup>19'</sup> is -CH(CH<sub>3</sub>)<sub>2</sub>, R<sup>20'</sup> is not -

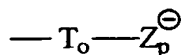
COCH<sub>3</sub>; R<sup>18</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>19</sup> is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>23</sup>)-; and (3) -N(R<sup>23</sup>R<sup>24</sup>)-; R<sup>21</sup>-R<sup>24</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkylenes, alkoxy, aryls, alkaryls, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> may be joined together with any other of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> to form part of a common ring; any geminal R<sup>21</sup>-R<sup>22</sup> may combine to form a carbonyl; any vicinal R<sup>21</sup>-R<sup>24</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21</sup>-R<sup>24</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

(b) aryliminium zwitterions having a net charge of from about +3 to about -3 are represented by the formula [XII]:

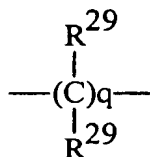


[XII]

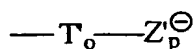
where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>26</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>26</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>25</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:



where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:

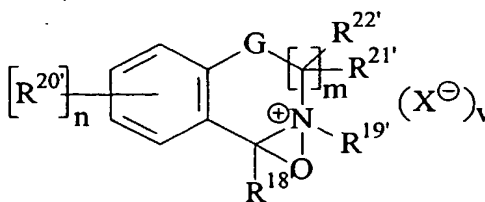


wherein  $q$  is an integer from 1 to 8;  $R^{29}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $R^{29}$  groups are not independently selected to be H;  $G$  is selected from the group consisting of: (1)  $-O-$ ; (2)  $-N(R^{30})-$ ; and (3)  $-N(R^{30}R^{31})-$ ;  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  may be joined together with any other of  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  to form part of a common ring; any geminal  $R^{27} - R^{28}$  may combine to form a carbonyl; any vicinal  $R^{27} - R^{31}$  may join to form unsaturation; and wherein any one group of substituents  $R^{27} - R^{31}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and provided that the radical represented by the formula:



is not  $CH_2CH(OSO_3^-)R^{41}$  wherein  $R^{41}$  is selected from the group consisting of geminal dimethyl substituted alkyl, unsubstituted alkyl and phenyl;

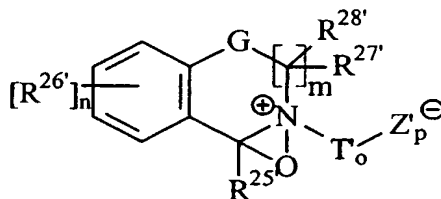
(c) oxaziridinium cations and polyions having a net charge of from about +3 to about -3, are represented by formula [XIII]:



[XIII]

wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{20'}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{20'}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{18'}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{19'}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring; G is selected from the group consisting of: (1) -O-; (2) -N( $R^{23'}$ )-; and (3) -N( $R^{23'}$  $R^{24'}$ )-;  $R^{21'}$ - $R^{24'}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched  $C_1$ - $C_{12}$  alkyls, alkenes, alkoxy, aryls, alkyls, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of  $R^{18'}$ ,  $R^{19'}$ ,  $R^{21'}$ - $R^{24'}$  may be joined together with any other of  $R^{18'}$ ,  $R^{19'}$ ,  $R^{21'}$ - $R^{24'}$  to form part of a common ring; any geminal  $R^{21'}$  -  $R^{22'}$  may combine to form a carbonyl; any vicinal  $R^{21'}$  -  $R^{24'}$  may join to form unsaturation; and wherein any one group of substituents  $R^{21'}$  -  $R^{24'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and wherein any one group of substituents  $R^{21'}$  -  $R^{24'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;  $X^-$  is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

(d) oxaziridinium zwitterions having a net charge of from about +3 to about -3, and are represented by formula [XIV]:

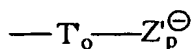


[XIV]

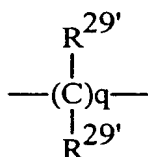
wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{26'}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{26'}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{25'}$  may be a substituted or unsubstituted radical selected



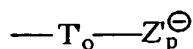
from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; the radical represented by the formula:



where  $Z'_p$  is covalently bonded to  $T_o$ , and  $Z'_p$  is selected from the group consisting of  $\text{---CO}_2^-$ ,  $\text{---SO}_3^-$ ,  $\text{---OSO}_3^-$ ,  $\text{---SO}_2^-$  and  $\text{---OSO}_2^-$ , and p is either 1 or 2;  $T_o$  is selected from the group consisting of:

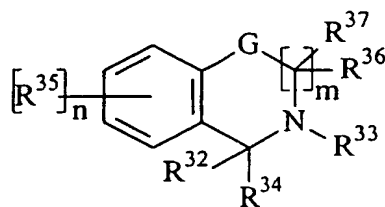


wherein q is an integer from 1 to 8;  $\text{R}^{29'}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $\text{R}^{29'}$  groups are not independently selected to be H; G is selected from the group consisting of: (1)  $\text{---O-}$ ; (2)  $\text{---N(R}^{30'})\text{---}$ ; and (3)  $\text{---N(R}^{30'}\text{R}^{31'})\text{---}$ ;  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{25'}$ ,  $\text{R}^{26'}$ ,  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  may be joined together with any other of  $\text{R}^{25'}$ ,  $\text{R}^{26'}$ ,  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  to form part of a common ring; any geminal  $\text{R}^{27'}$ - $\text{R}^{28'}$  may combine to form a carbonyl; any vicinal  $\text{R}^{27'}$ - $\text{R}^{31'}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{27'}$ - $\text{R}^{31'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and provided that the radical represented by the formula:

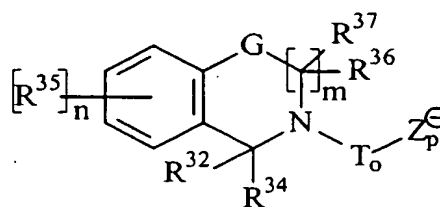


is not  $\text{CH}_2\text{CH(OSO}_3^-)\text{R}^{41}$  wherein  $\text{R}^{41}$  is selected from the group consisting of geminal dimethyl substituted alkyl, unsubstituted alkyl and phenyl;

(e) modified amines, which have a net charge of from about -3 to about +3, that are represented by the formulas [XV] and [XVI];



[XV]

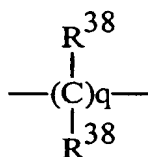


[XVI]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



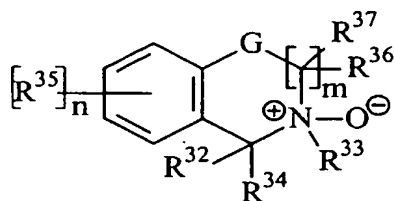
where  $Z_p^+$  is covalently bonded to  $T_o$ , and  $Z_p^+$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$ , and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



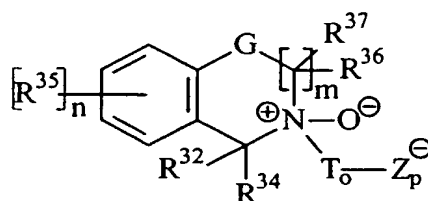
wherein  $q$  is an integer from 1 to 8;  $R^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $R^{38}$  groups are not independently selected to be H;  $G$  is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{39})-$ ; and (3)  $-\text{N}(\text{R}^{39}\text{R}^{40})-$ ;  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,

R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may be joined together with any other of R<sup>32</sup>, R<sup>33</sup>, R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> to form part of a common ring; any geminal R<sup>36</sup>-R<sup>37</sup> may combine to form a carbonyl; any vicinal R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety;

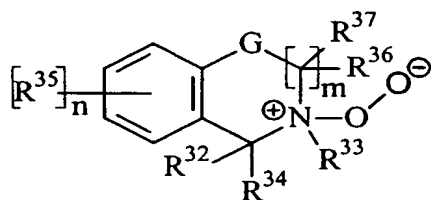
(f) modified amine oxides, which have a net charge of from about -3 to about +3, that are represented by formulas [XVII]-[XX]:



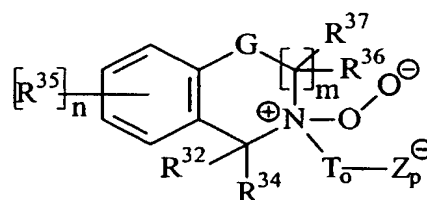
[XVII]



[XVIII]

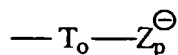


[XIX]



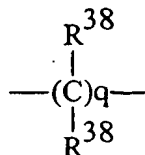
[XX]

where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>35</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>35</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>32</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>33</sup> may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of

$-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$ , and p is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of:



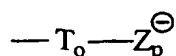
wherein q is an integer from 1 to 8;  $\text{R}^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $\text{R}^{38}$  groups are not independently selected to be H; G is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{39})-$ ; and (3)  $-\text{N}(\text{R}^{39}\text{R}^{40})-$ ;  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may be joined together with any other of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  to form part of a common ring; any geminal  $\text{R}^{36}$ - $\text{R}^{37}$  may combine to form a carbonyl; any vicinal  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and

(g) mixtures thereof.

8. The bleaching composition according to Claim 7 wherein said organic catalyst compound is selected from the group consisting of:

(a) aryliminium cations and aryliminium polyions having a net charge of from about +3 to about -3, as represented by the formula [XI], include those of formula [XI] where  $\text{R}^{18}$  is H or methyl,  $\text{R}^{19}$  is substituted or unsubstituted, saturated or unsaturated  $\text{C}_1 - \text{C}_{14}$  alkyl or cycloalkyl, and  $\text{R}^{20}$  is H;

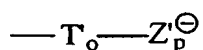
(b) aryliminium zwitterions having a net charge of from about +3 to about -3, as represented by the formula [XII], include those of formula [XII] where  $\text{R}^{25}$  is H or methyl, and for the radical represented by the formula:



$\text{Z}_p^-$  is  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$  or  $-\text{OSO}_3^-$ , and p is 1 or 2;

(c) oxaziridinium cations and oxaziridinium polyions having a net charge of from about +3 to about -3, as represented by the formula [XIII], include those of formula [XIII] where  $R^{18'}$  is H or methyl,  $R^{19'}$  is substituted or unsubstituted, saturated or unsaturated,  $C_1 - C_{14}$  alkyl or cycloalkyl, and  $R^{20'}$  is H;

(d) aryliminium zwitterions having a net charge of from about +3 to about -3, as represented by the formula [XIV], include those of formula [XIV] where  $R^{25'}$  is H or methyl, and for the radical represented by the formula:



$Z_p^-$  is  $-CO_2^-$ ,  $-SO_3^-$  or  $-OSO_3^-$ , and p is 1 or 2;

(e) modified amines as represented by the formulas [XV] and [XVI] wherein the modified amines have a net charge of about +1 to about -1 and wherein  $R^{32}$  is H and/or  $Z_p^-$  is  $-CO_2^-$ ,  $-SO_3^-$ , or  $-OSO_3^-$ ; and

(f) modified amine oxides as represented by the formulas [XVII]-[XX] wherein the modified amine oxides have a net charge of about +1 to about -1 and wherein  $R^{32}$  is H and/or  $Z_p^-$  is  $-CO_2^-$ ,  $-SO_3^-$ , or  $-OSO_3^-$ .

9. The bleaching composition according to Claim 1 wherein said organic catalyst compound comprises from about 0.0001% to about 10% by weight of said composition, and said peroxygen source, when present, comprises from about 0.01% to about 60% by weight of said composition.

10. The bleaching composition according to Claim 9 wherein said organic catalyst compound comprises from about 0.01% to about 0.5% by weight of said composition.

11. The bleaching composition according to Claim 1 wherein said peroxygen source, when present, is selected from the group consisting of:

(a) preformed peracid compounds selected from the group consisting of percarboxylic acids and salts, percarbonic acids and salts, perimidic acids and salts, peroxymonosulfuric acids and salts, and mixtures thereof; and

(b) hydrogen peroxide sources selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof; and a bleach activator.

12. The bleaching composition according to Claim 11 wherein said peroxygen source is a hydrogen peroxide sources selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof; and a bleach activator.

5 13. The bleaching composition according to Claim 11 wherein said bleach activator is selected from the group consisting of: tetraacetyl ethylene diamine (TAED); benzoylcaprolactam (BzCL); 4-nitrobenzoylcaprolactam; 3-chlorobenzoylcaprolactam; benzoyloxybenzenesulphonate (BOBS); nonanoyloxybenzenesulphonate (NOBS); phenyl benzoate (PhBz);  
10 decanoyloxybenzenesulphonate (C<sub>10</sub>-OBS); benzoylvalerolactam (BZVL); octanoyloxybenzenesulphonate (C<sub>8</sub>-OBS); perhydrolyzable esters; 4-[N-(nonanoyl) amino hexanoyloxy]-benzene sulfonate sodium salt (NACA-OBS); lauroyloxybenzenesulfonate (LOBS or C<sub>12</sub>-OBS); 10-undecenoyloxy  
benzenesulfonate (UDOBS); decanoyloxybenzoic acid (DOBA) and mixtures thereof.

15 14. The bleaching composition according to Claim 1 wherein said bleaching compound further comprises one or more of the following detergent components selected from the group consisting of: surfactants, solvents, buffers, enzymes, soil release agents, clay soil removal agents, dispersing agents, brighteners, suds suppressors, fabric softeners, suds boosters, enzyme  
20 stabilizers, builders, chelants, other bleaching agents, dyes, dye transfer inhibiting agents, perfumes and mixtures thereof.

15. The bleaching composition according to Claim 1 wherein said bleaching composition is a laundry detergent.

25 16. The bleaching composition according to Claim 1 wherein said bleaching composition is a laundry additive.

17. The bleaching composition according to Claim 16 wherein said laundry additive further includes a suitable carrier.

30 18. A method for laundering a fabric in need of laundering, said method comprises contacting said fabric with a laundry solution containing a bleaching composition according to Claim 1.

35 19. A method according to Claim 18 wherein the in-use concentration for said organic catalyst compound is about 0.01 ppm to about 10 ppm.

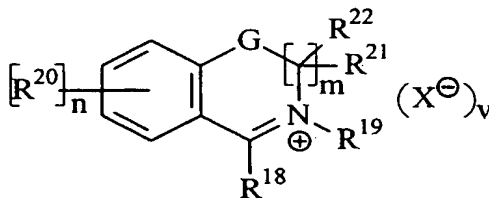
20. A method according to Claim 19 wherein the in-use concentration for said organic catalyst compound is about 0.04 ppm to 2.5 ppm.

21. A method according to Claim 20 wherein the in-use concentration for said organic catalyst compound is about 0.1 ppm to 1 ppm.

22. A product comprising a bleaching composition according to Claim 1, the product further including instructions for using said compound to launder a fabric in need of laundering, the instructions including the step of contacting said fabric with a laundry solution containing the product.

23. An organic catalyst compound wherein said organic catalyst compound is selected from the group consisting of organic catalyst compounds that exhibit an organic catalyst lifetime greater than or equal to 30 minutes, wherein said organic catalyst compound is selected from the group consisting of:

a) aryliminium cations and aryliminium polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [XI]:

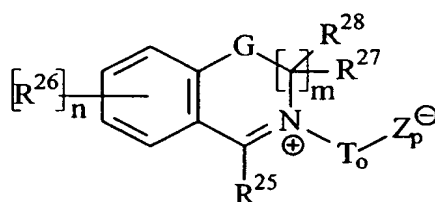


[XI]

where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{20}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{20}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring, provided that  $R^{20}$  is not phenyl; and provided that when  $R^{19}$  is isopropyl,  $R^{20}$  is not  $\text{COCH}_3$ ;  $R^{18}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{19}$  is a nonlinear radical selected from the group consisting of alkyl, cycloalkyl and alkaryl; G is selected from the group consisting of: (1) -O-; (2) -N( $R^{23}$ )-; and (3) -N( $R^{23}R^{24}$ )-;  $R^{21}$ - $R^{24}$  are

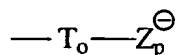
substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyl, cycloalkyl, and heterocyclic rings; provided that any of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> may be joined together with any other of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> to form part of a common ring; any geminal R<sup>21</sup>-R<sup>22</sup> may combine to form a carbonyl; any vicinal R<sup>21</sup>-R<sup>24</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21</sup>-R<sup>24</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

b) aryliminium zwitterions, which have a net charge of from about +3 to about -3, that are represented by the formula [XII]:



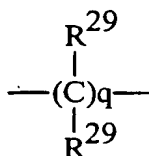
[XII]

where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>26</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>26</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>25</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:

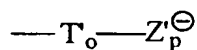


where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup> and p is either 1, 2 or 3; T<sub>o</sub> is selected from the group consisting of:



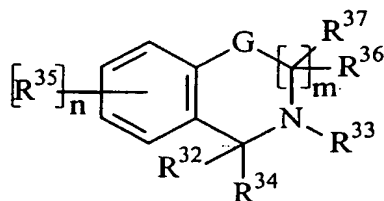


wherein  $q$  is an integer from 1 to 8;  $\text{R}^{29}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $\text{R}^{29}$  groups are not independently selected to be H;  $G$  is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{30})-$ ; and (3)  $-\text{N}(\text{R}^{30}\text{R}^{31})-$ ;  $\text{R}^{27}$ ,  $\text{R}^{28}$ ,  $\text{R}^{30}$  and  $\text{R}^{31}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{25}$ ,  $\text{R}^{26}$ ,  $\text{R}^{27}$ ,  $\text{R}^{28}$ ,  $\text{R}^{30}$  and  $\text{R}^{31}$  may be joined together with any other of  $\text{R}^{25}$ ,  $\text{R}^{26}$ ,  $\text{R}^{27}$ ,  $\text{R}^{28}$ ,  $\text{R}^{30}$  and  $\text{R}^{31}$  to form part of a common ring; any geminal  $\text{R}^{27} - \text{R}^{28}$  may combine to form a carbonyl; any vicinal  $\text{R}^{27} - \text{R}^{31}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{27} - \text{R}^{31}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and provided that the radical represented by the formula:

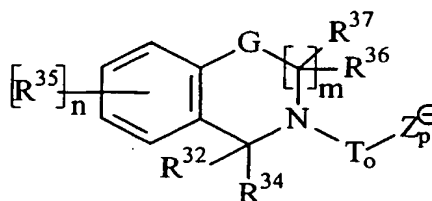


is not  $\text{CH}_2\text{CH}(\text{OSO}_3^-)\text{R}^{41}$  wherein  $\text{R}^{41}$  is selected from the group consisting of geminal dimethyl substituted alkyl, unsubstituted alkyl and phenyl;

c) modified amines that are represented by the formulas [XV] and [XVI]:



[XV]

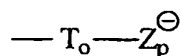


[XVI]

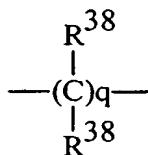
where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $\text{R}^{34}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic, sulfonato and persulfonato radicals, each  $\text{R}^{35}$  is independently selected from a substituted or

unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>35</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>32</sup> may be a substituted or unsubstituted radical  
 5 selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>33</sup> may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:

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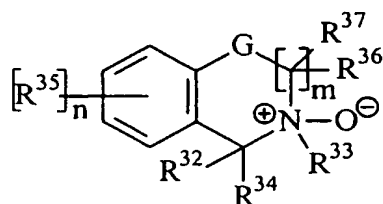


where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup>, and p is either 1, 2 or 3; T<sub>o</sub> is selected from the group  
 15 consisting of:

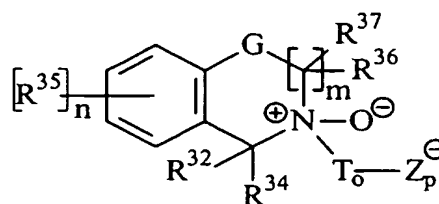


wherein q is an integer from 1 to 8; R<sup>38</sup> is independently selected from substituted or  
 20 unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all R<sup>38</sup> groups are not independently selected to be H; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>39</sup>)-; and (3) -N(R<sup>39</sup>R<sup>40</sup>)-; R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> are substituted or unsubstituted radicals independently selected from the group  
 25 consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of R<sup>32</sup>, R<sup>33</sup>, R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may be joined together with any other of R<sup>32</sup>, R<sup>33</sup>, R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> to form part of a common ring; any geminal R<sup>36</sup>-R<sup>37</sup> may combine to form a carbonyl; any vicinal R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may join to form unsaturation; and wherein any one  
 30 group of substituents R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety;

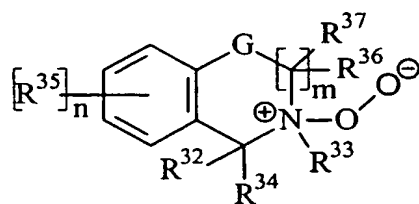
d) modified amine oxides that are represented by formulas [XVII]-[XX]:



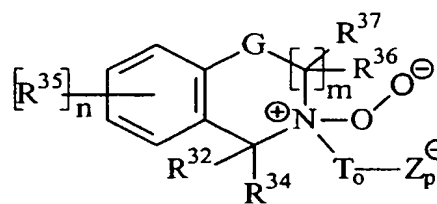
[XVII]



[XVIII]

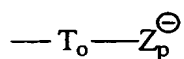


[XIX]

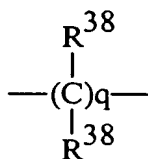


[XX]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic, sulfonato and persulfonato radicals; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:

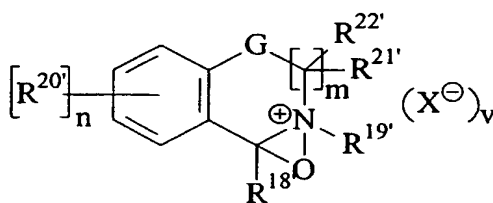


where  $Z_p^{\ominus}$  is covalently bonded to  $T_o$ , and  $Z_p^{\ominus}$  is selected from the group consisting of  $-\text{CO}_2^{\ominus}$ ,  $-\text{SO}_3^{\ominus}$ ,  $-\text{OSO}_3^{\ominus}$ ,  $-\text{SO}_2^{\ominus}$  and  $-\text{OSO}_2^{\ominus}$ , and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



wherein  $q$  is an integer from 1 to 8;  $\text{R}^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all  $\text{R}^{38}$  groups are not independently selected to be H;  $G$  is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{39})-$ ; and (3)  $-\text{N}(\text{R}^{39}\text{R}^{40})-$ ;  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may be joined together with any other of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  to form part of a common ring; any geminal  $\text{R}^{36}$ - $\text{R}^{37}$  may combine to form a carbonyl; any vicinal  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

f) oxaziridinium cations and polyions, which have a net charge of from about +3 to about -3, that are represented by formula [XIII]:

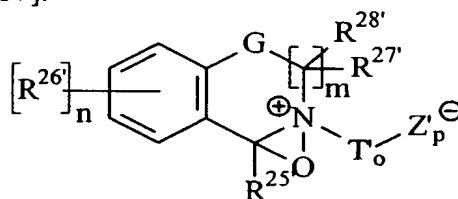


[XIII]

wherein  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4; each  $\text{R}^{20}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $\text{R}^{20}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $\text{R}^{18}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $\text{R}^{19}$  may be a

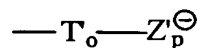
substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>23'</sup>)-; and (3) -N(R<sup>23'</sup>R<sup>24'</sup>)-; R<sup>21'</sup>-R<sup>24'</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of R<sup>18'</sup>, R<sup>19'</sup>, R<sup>21'</sup>-R<sup>24'</sup> may be joined together with any other of R<sup>18'</sup>, R<sup>19'</sup>, R<sup>21'</sup>-R<sup>24'</sup> to form part of a common ring; any geminal R<sup>21'</sup> - R<sup>22'</sup> may combine to form a carbonyl; any vicinal R<sup>21'</sup> - R<sup>24'</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21'</sup> - R<sup>24'</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; and wherein any one group of substituents R<sup>21'</sup> - R<sup>24'</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

g) oxaziridinium zwitterions, which have a net charge of from about +3 to about -3, that are represented by formula [XIV]:

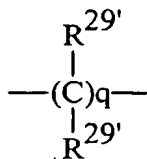


[XIV]

wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>26'</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>26'</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>25'</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; the radical represented by the formula:



where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup>, and p is either 1 or 2; T<sub>o</sub> is selected from the group consisting of:



wherein q is an integer from 1 to 8; R<sup>29'</sup> is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups, provided that all R<sup>29'</sup> groups are not independently selected to be H; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>30'</sup>)-; and (3) -N(R<sup>30'</sup>R<sup>31'</sup>)-; R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of R<sup>25'</sup>, R<sup>26'</sup>, R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> may be joined together with any other of R<sup>25'</sup>, R<sup>26'</sup>, R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> to form part of a common ring; any geminal R<sup>27'</sup>-R<sup>28'</sup> may combine to form a carbonyl; any vicinal R<sup>27'</sup>-R<sup>31'</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>27'</sup>-R<sup>31'</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; and

i) mixtures thereof.

24. The organic catalyst compound according to Claim 23 wherein said organic catalyst exhibits an organic catalyst lifetime greater than 30 minutes.

25. The organic catalyst compound according to Claim 23 wherein said organic catalyst exhibits an organic catalyst lifetime greater than 1 hours.

26. The organic catalyst compound according to Claim 23 wherein said organic catalyst exhibits an organic catalyst lifetime greater than 2 hours.